glitching

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Abstract
glitching is a digital installation and performance project that attempts to re-describe the movement derived from characters in contemporary sports and action computer games.

As the gaming world grows ever more sophisticated and ubiquitous, the movements of characters become more and more realistic and convincing, thanks to constant improvements in software and hardware. Gaming characters of the 21st century have an extraordinary embodiment, fluidity of movement and naturalness. However, there are always imperfections and glitches, whether through unexpected programming errors or the users' inability to control the characters in seamless game-play, there is still the potential for awkwardness between spells of perfection.

I have focused on the artificial nature of these glitches by employing highly trained real bodies i.e. professional dancers, to re-stage them. I am interested in how real bodies cope with, and interpret into sequences of choreography, the limits of such foreign and unnatural movement.

glitching explores how this physically re-enacted choreography can be embedded and re-imaged within a responsive digital environment. Using the premise of home entertainment dance and training games, it employs a Microsoft Kinect (motion-sensor controller), and large-screen display to create an interactive installation. The audience is invited to step into the digital shoes of the 'lead dancer', and attempt to follow the awkward and intricate, glitch choreography performed by the dancing troupe on screen.

Alongside the interactive installation there are a series of *glitching* live performances featuring the installation, dancers Tony Mills, Hannah Seignior, Felicity Beveridge, and a performance soundtrack devised by Martin Parker.

Keywords
glitch, Kinect, performance, choreography, installation

Introduction – An interdisciplinary to transdisciplinary art practice

> *To reflect on the intersections between humans and machines, and wonder what the unceasing developments in science and technology might mean for being human.* (Taylor 2011)

This eloquently simple yet astute statement from Alex Taylor, Sociologist at the Microsoft Research (MSR) Cambridge Lab, about his research goals, resonates with my own aspiration as an artist. I've spent the past sixteen years creating digital media projects that interrogate the impact of the virtual on the body, relationships and human experience. I would argue this has, over time, evolved from an interdisciplinary to transdisiplinary approach. I have undertaken numerous collaborations with a wide range of practitioners from within the fields of art, science, and technology, including dancers, programmers and dermatologists. My most recent project *glitching* attempts to address the potential of transdisciplinary digital art as defined by Steve Gibson, in that it makes "the *effort* to understand the medium of the *other* in more than superficial terms" (Gibson 2008, 1).

Previous projects include *Doppelganger*, a multi-faceted digital art work that reflects upon the historical tradition of portraiture, and explores the potential of 21st century technology upon the genre. The project involves a series of digitally constructed portraits, presented as

larger-than-life digital prints and real-time 3D, based on an international group of artists in their studios. Doppelganger is suggestive of a set of computer games characters, but one that is *other* than the mainstream. The characters do not exhibit fantastical, erotised proportions, but the lumps, bumps and curves of 'real' people. Ultimately this causes them to literally fray at the edges, as their normal physiques push the artificially prescribed limits of the software of their creation.

Figure 1: Doppelganger 2003-4. Digital Prints. Copyright: Beverley Hood

Although, I would argue that my scrutiny of our complex relationship to technology is current, I also recognise that this creative line of enquiry is not a novel undertaking. Extraordinary historical works, such as Mary Shelley's *Frankenstein* (first published in 1818), are significant demonstrations of much earlier investigations into the implications, influence and pressure exerted upon human existence by technology, development and industry.

> *Mary Shelley's Frankenstein makes the first post-human life form of a modern age… Shelley writes far in advance of the digital computers which later begin to effect such developments, but she clearly feels the stirrings of artificial life even as industrialization begins and does much to programme the dreams and nightmares of the next two centuries…*
> (Plant 2000, 269)

The glitch

My most recent artwork, *glitching*, is a digital installation and performance project that attempts to re-describe the movement derived from characters in contemporary sports and action computer games. Commissioned by the Scotland & Medicine partnership for the exhibition *Human Race: inside the science of sports medicine* (with additional funding from Creative Scotland and Edinburgh College of Art), the project tours Scotland throughout 2012, as an official part of the London 2012 cultural programme.

As the gaming world grows ever more sophisticated and ubiquitous, the movements of characters become more and more realistic and convincing. Gaming characters of the 21st century have an extraordinary embodiment, fluidity of movement and naturalness. This movement is often derived from the real; games such FIFA, use motion capture and body scanning of professional sports players to create convincing, individual motion sequences to be used within real-time gameplay (FIFA Motion Capture -

http://fifasoccerblog.com/blog/fifa12-motion-capture/). The world of computer game development is voracious in harnessing, driving and implementing, the constant and rapid improvements in software and hardware.

However, there are always imperfections and glitches, and it is these unintentional disruptions that I am interested in. Whether through unexpected programming errors, the users' inability to control the characters in seamless game-play (resulting in bumping into walls, misfiring, etc.) or the fully intentional cheat, there is still the potential for awkwardness and interference, between spells of perfection.

Glitches are a rich area of artistic enquiry, with entire publications and virtual museums devoted to artists and designers inspired by the glitch (IdN: Glitch Issue, 2011 and Mark America's project *The Museum of Glitch Aesthetics*, http://www.nwfor2012.com/whatson/moga). The artist, Clement Valla, has used the glitch as source for a series of images, *Postcards from Google Earth*, which exploit the disruptive, imperfect, and problematic rendering of certain physical terrains by Google Earth. Valla sites his interest in glitches deriving from the fact that "Glitches generate forms that no individual has thought of or set out to create. Rather, they result from the interaction of the material processes (glitches due to hardware), the code (glitches due to software), and the user or programmer. " (Valla 2011, 24)

Figure 2: Postcards from Google Earth 2011. Digital image. Copyright: Clement Valla.

The artist collective JODI, are well known for their artistic tactics of modification, disruption and interference. In 2006, they created *Max Payne Cheats only*, a work derived from the glitches and cheats within the video game *Max Payne 2: The Fall of Max Payne*, developed by Remedy Entertainment.

> *Jodi have intervened in the programme structure in such a way that absurd perspectives and effects alter the game's otherwise realistic graphics: we see the massive hero repeating idiotic movements; he dips his angular head into a virtual matrix; his body appears semitransparent.*
> (Transmediale Festival 2006)

Similarly, *glitching*, also focuses on the absurd, and artificial nature of movement that occurs during character glitches. Reams of game-play footage posted on YouTube was unearthed as part of project research. The question was how to deconstruct, re-embody and re-stage this

material? In order to do so, I employed highly trained, real bodies, a role taken on in the first instance by Tony Mills, a professional Breakdancer with an extraordinary ability to interpret and create awkward and extreme movements. I attempted to create a trans-disciplinary production environment, which would enable us to discuss, question and create through a rigorous process of critical deconstruction and construction, across disciplinary constraints. The aim of this collaborative relationship was to foster complexity and depth in the integration of concept, process and form.

Figure 3: Skate for Xbox 360 2007. Copyright: Electronic Arts.

As a result, we collaboratively explored how real bodies cope with, and interpret into sequences of choreography, the potential and limits of the foreign, unnatural movement of computer glitches. This included establishing an overall physical texture to the movement, based on tight muscular control, non-symmetry, seemingly offbeat tempo (i.e. not working to an 8 bar count) and performer being simultaneously present and distant. We also explored what we coined as "impossible moves" i.e. movements that are apparently beyond the limits of the human body. Our collaborative, transdisciplinary approach was an attempt to interrogate whether by taking the digital and transplanting it, re-interpreting it, embodying it within the physical body – literally re-enacting it – does it disintegrate, transform, and become something new?

Also working with dance, to analyse limitations of the human body, physical conventions, and potentially "redefining what the body can do" (Monahan 2010) is choreographer, Wayne McGregor and his radical dance company Random Dance. The company's 2010 production *Far*, attempted to establish a "radical cognitive research process" (Random Dance 2012) and draws upon the input of neurologists to "un-pick" conventions within the dancer's individual approach to movement, disrupting and challenging patterns of behaviour. The result is stark, peculiar and highly individual choreography, at times not dissimilar to the awkward, disorderly and unsettling movements within computer game character glitches.

Embedding the interference – the installation

The *glitching* project explores how character glitches, physically re-enacted through choreography, can be embedded and re-presented within a responsive installation environment, for an audience to interact with. This entailed digitising the physically enacted glitch choreography, performed by Tony Mills. Central to this process was the motion controlled sensor, Microsoft Kinect, marketed as a gaming controller but infamously hacked only a few days after its release in 2010 (BBC 2010). The Kinect is an extraordinary example of gesture driven hardware, accessible and affordable, with radical potential for creative practitioners. Microsoft emphasise its potential, in combination with their Kinect Software Development Kit (SDK), in the hands of developers, to create natural user interfaces (NUI) (Microsoft 2012). I readily acknowledge the relevance of developers, programmers and technologists in this development, particularly as the Kinect is not an easily tool to tackle without a significant level of technical competence. However, I would argue that creative

practitioners are equally important within this development, to interrogate the implications, potential and resistance of gesture driven interaction.

In order to use the Kinect as a motion capture device we experimented with pre-existing hacks, plugins and commercially available Motion Capture software, developed for the Kinect. This immature technology has been radically exploited, with a multitude of uses, users and channels of information distribution. Unfortunately, as a result, the reality of working with the Kinect is rife with technical difficulties, inconsistencies, and frustration.

We attempted to harness these disruptions and inconsistencies, as a constructive element to feed back into the project. For example, manipulating the Kinect as a motion capture device with the Voice-Synthesising and Animation software MikuMikuDance, created a new level of noise and mis-interpretation of the physical choreography. The resulting digitised material was then used as reference for modifications of the texture, movements and quality of the physical choreography.

Eventually, the choreographed sequence was captured, cleaned up (so as to be a functional representation of the choreographic sequence) and applied to a 3D character version of Tony. The digital Tony was constructed by appropriating pre-existing character models, freely available in software libraries.

Using the premise of home entertainment dance and fitness training games (such as Just Dance, Dance Central and Your Shape:Fitness Evolved), *glitching* employs the Kinect (on this occasion as a motion-sensor controller), a pseudo game environment and large-screen display to create a digital installation for the public to "play". The digital game environment was created using the Unity game engine, which had a number of pre-existing Kinect plugins already in circulation. Using these plugins as the initial technical framework, I employed an experienced games developer and programmer, Hemal Bodasing, to adapt and re-shape the Kinect/Unity relationship to suit the requirements of *glitching*. As a result, using skeletal tracking, the Kinect enables the user to step into the digital shoes of the 'lead dancer', and attempt to follow the awkward and intricate, glitch choreography performed by the dancing troupe on screen.

Figure 4: glitching 2012. Interactive installation interface. Copyright: Beverley Hood

On the surface, the Kinect may appear to be an uncanny example of Donna Haraway's proposition that "The difference between machine and organism is thoroughly blurred; mind, body and tool are on very intimate terms" (Haraway 1997, 56). However, *glitching* reveals that this blurring is regularly brought sharply into focus, as an encounter with the Kinect is in itself rife with interference, resistance and glitches. As the user attempts to follow the digital choreography onscreen, their movements are distorted and transformed, due to skeletal limitations and the (mis)interpretation and unreliability of the data from the Kinect.

Glitching in action – the performance

Aside from the interactive installation, there are *glitching* live performances, which use the interactive installation as both backdrop and reference to present a piece in five parts, performed as a series of expanded glitch cycles. The performance was devised collectively under my creative direction, with dancers Tony Mills, Hannah Seignior, Felicity Beveridge, and composer Martin Parker, who also devised the performance soundtrack with input from the group. The *glitching* performance is approximately 30minutes in duration, and ends with an invitation to the audience to come on stage to 'play' and interact with the game interface.

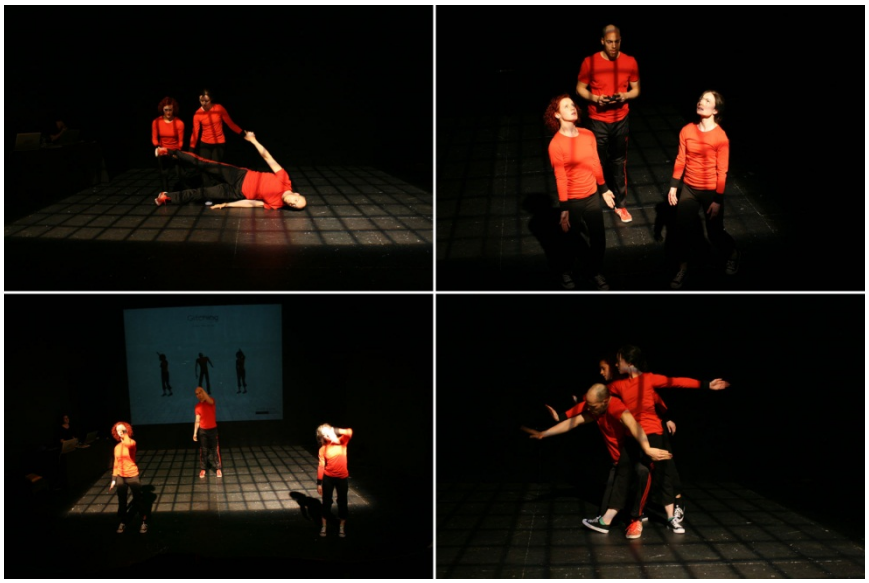

Figure 5: glitching 2012. Performance. Copyright: Beverley Hood.

Built into *glitching* are multiple copies, versions, distortions and deviations: the physical movement "source" Tony Mills; the motion captured copy, translated and "cleaned up" by software; the re-enactment of this within the Unity game engine; and the layers of distortion applied by the Kinect translating the users movements. In the performance, this layering of copies and versions is taken to another level, with the source, Tony Mills, coming back on stage to dance with a distilled, re-interpreted, and disruptive version of himself.

Real world echos, in the form of Hannah Seignior and Felicity Beveridge, become yet more copies, but in this case real, human embodiments, who bring with them their own personal and phenomenal interpretations of the material. This material, sourced from Tony, appears in an array of divergent iterations, each imprinted with the qualities and effect of its processing whether physical enactment or data interpretation. For me, *glitching* resonates, with Marcel Duchamp's thoroughly inconsistent (and mostly undefined) but potent concept of *infra-mince* as suggested by Gavin Parkinson, i.e. that it is concerned with "manifesting a sense of 'slippage' – of loss, lack or infinite multiplicity – threatening at once the unity of the self and the possibility of an absolute comprehension of the world." (Parkinson 2008, 78)

glitching absorbs and revels in the disintegration, misinterpretation and unreliability of the exchange of data from one source to another. The New York based artist, Kristin Lucas has addressed similar concerns with a widely differing approach. Her early performance *A Common Object has Special Powers*, (1997) with Lucas positioned in the role of performer/technician, is a farcical, pseudo presentation, "disrupted by events such as pizza delivery, missing cables, and mispatches". (Lucas 2012). Full of humour, edged with frustrated realism, technology in this environment causes as many problems as it solves. More recently she created the project *Refresh,* exploring what she terms "versionhood", described as "the notion of a multiplicity of the self—the self as iterable" (Jahn and Lucas 2010). For *Refresh* she legally changed her name, to her own name, citing the word "refresh" as the reason she wished to change it.

> *the presiding judge who granted the request said: "So you have changed your name to exactly what it was before in the spirit of refreshing yourself as though you were a web page."*
> (Jahn 2010)

Conclusion

glitching sits within a diverse, rich body of practitioners' exploring the limitations and potential of technology, the implications of its disruption and the resulting interference as both a negative and constructive force. It is also an example of creative investigation into the potential of motion controlled, gesture driven technology as tools for installation and performance. Large-scale commissions such as *me and my shadow*, an international telepresence experiment between four portals in London, Paris, Istanbul and Brussels led by UK artist Joseph Hyde, uses the Kinect as key technology for movement based interaction and immersion (body>data>space 2012). Australian born and Edinburgh based, dancer and choreographer Skye Reynolds leads the creative development of *transmission*, an interactive performance work aimed at children, which utilises the Wii to generate a live performance soundtrack. Within this fertile network of experiments and inquiry, exists *glitching.*

The project attempts to constructively assimilate digital media curator Richard Rinehart's adaption (motivated by the emergence of media art) of Walter Benjamin's assertion that "the work of art reproduced becomes the work of art designed for reproduction" (Reinhart 2011). This reproducibility and adaptability is embedded within concept, development process and final artwork, which exists now, as multiple releases, adjusting to its presentation environment, whether installation or performance.

Michael Freid asserted that "art degenerates as it approaches the condition of theatre" (Freid 1968, 141). If this is the case I would gladly argue that *glitching* may be highly degenerative.

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Biographical notes

Beverley Hood studied Sculpture and Electronic Imaging at Duncan of Jordanstone College of Art and Nova Scotia College of Art & Design. Since the mid 1990's she has been creating digital art works, that interrogate the impact of the virtual on the body, relationships and human experience, which have been exhibited internationally. She set up the email list *ambit* (networking media art in Scotland) with Chris Byrne in 2000, and has been an active member of other networks and groups such as *elevator* (Scottish media art group in mid – late '90s), and more recently *CIRCLE* (Scottish/UK researchers and practitioners developing collaborative creative environments). She lives in Edinburgh and is Postgraduate Lecturer in the School of Design at Edinburgh College of Art, University of Edinburgh.